

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:
Rath et al.

Serial No.: 10/767,040

Confirmation No.: 4827

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Filed: January 29, 2004

Group Art Unit: 2161

Examiner: Kavita Padmanabhan

For: RELATIONAL TO HIERARCHICAL TREE DATA CONVERSION TECHNIQUE

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
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August 1, 2007
Date

/Jon K. Stewart/
Jon K. Stewart

APPEAL BRIEF

Dear Sir:

Applicants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2161 dated March 1, 2007, finally rejecting claims 1-20. The final rejection of claims 1-20 is appealed. This Appeal Brief is believed to be timely since it is electronically transmitted by the due date of August 1, 2007, as set by the filing of a Notice of Appeal on June 1, 2007.

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Real Party in Interest

The present application has been assigned to International Business Machines Corporation, Armonk, New York.

Related Appeals and Interferences

Applicant asserts that no other appeals or interferences are known to the Applicant, the Applicant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-20 are pending in the application. Claims 1-20 were originally presented in the application. Claims 1-20 stand finally rejected as discussed below. The final rejections of claims 1-20 are appealed. The pending claims are shown in the attached Claims Appendix.

Status of Amendments

All claim amendments have been entered by the Examiner. No amendments to the claims were proposed after the final rejection.

Summary of Claimed Subject Matter

Claimed embodiments include methods (*see claims 1-9*), computer programs stored on computer readable storage media (*see claims 10-14*) and computer systems (*see claims 15-20*) directed to a relational to hierarchical tree data conversion technique. That is, embodiments of the invention are directed to managing structured data and storing such structured data in a relational format. *See Application*, 1:12-15, 3:5-7, 5:10-31, *Abstract*.

CLAIM 1 – INDEPENDENT:

Claim 1 recites a method for managing structured data having one or more repeating fields. *See Application*, 3:9-22, 5:12-14, 5:23-31, *Abstract*. This method includes receiving a hierarchical data structure containing the structured data. *See Application*, 5:12-17, 12:28-34 – 13:1-3, Figure 3A 302, 304, 306, 306, 308 and 310, 13:5-26. As claimed, the structured data is annotation data related to an annotated data object and at least two instances of a repeating field are contained in the structured data. *See Application*, 13:5-15, Figure 4, 404. The method also includes parsing the structured data to identify the repeating fields. *See Application*, 5:17-26. 13:28-33 – 14:1-2, Figure 3A, 312. This method also includes generating an ordinal value for each instance of the repeating fields, each ordinal value indicating an order in which a corresponding instance of a repeating field occurs in the hierarchical data structure as received. *See Application*, 14:1-2, 14:6-18, Figure 3A, 314, Figure 6A, 602, 604, and 606. This method also includes storing the structured data and ordinal values in one or more relational tables. *See Application*, 14:19-21, 14:2-4, Figure 3A, 316, Figure 6A 600.

CLAIM 4 – DEPENDENT:

Claim 4 further limits the method recited by claim 1. In particular, claim 4 specifies that the structured data contains at least one repeating group of one or more fields. *See Application*, 13:5-15, Figure 4, 406. Claim 4 also species that the method includes generating a group ordinal value for each instance of the repeating group of

fields, each ordinal value indicating an order in which a corresponding instance value of the repeating group of fields occurs in the structured data as received. *See Application*, 14:6-18, Figure 6B, 610, 612, 614, and 616.

CLAIM 10 – INDEPENDENT:

Claim 10 is directed to a computer-readable medium containing an executable component for managing structured data having one or more repeating fields, which, when executed by a processor, performs an operation. *See Application*, 3:24-33, 6:22-33, Abstract. The operation includes receiving a hierarchical data structure containing the structured data *See Application*, 5:12-17, 12:28-34 – 13:1-3, Figure 3A 302, 304, 306, 306, 308 and 310, 13:5-26. As claimed, the structured data is annotation data related to an annotated data object, and wherein at least two instances of a repeating field are contained in the structured data. *See Application*, 13:5-15, Figure 4, 404. The operation also includes parsing the structured data to identify the repeating fields. *See Application*, 5:17-26. 13:28-33 – 14:1-2, Figure 3A, 312. The claimed operation also includes generating an ordinal value for each instance of the repeating fields, each ordinal value indicating an order in which a corresponding instance of a repeating field occurs in the hierarchical data structure as received. *See Application*, 14:1-2, 14:6-18, Figure 3A, 314, Figure 6A, 602, 604, and 606. The claimed operation also includes storing the structured data and ordinal values in one or more relational tables. *See Application*, 14:19-21, 14:2-4, Figure 3A, 316, Figure 6A 600.

CLAIM 13 – DEPENDENT:

Claim 13 further limits the operation recited by claim 10. In particular, claim 10 specifies that the structured data contains at least one repeating group of one or more fields, *See Application*, 13:5-15, Figure 4, 406. And that the operation also includes generating a group ordinal value for each instance of the repeating group of fields, each ordinal value indicating an order in which a corresponding instance value of the repeating group of fields occurs in the structured data as received. *See Application*, 14:6-18, Figure 6B, 610, 612, 614, and 616.

CLAIM 15 – INDEPENDENT:

Claim 15 is directed to a system for managing structured data. See Application, 4:1-13, 7:5-14, Abstract. The system includes a set of template structures, each specifying one or more fields. See Application, 12:28-34 – 13:1-3, Figure 3, 311, Figure 4, 311. The system includes a client component configured to generate interfaces based on the template structures for receiving the structured data and to generate a hierarchical data structure containing the structured data. See Application, 5:12-17, 12:28-34 – 13:1-3, 8:1-10, Figure 1, 102, Figure 3A 302, 304, 306, 306, 308 and 310, 13:5-26. As claimed, the structured data contains one or more repeating fields with multiple instance values and wherein the structured data is annotation data related to an annotated data object. See Application, 13:5-15, Figure 4, 404. The system also includes a server component configured to receive the hierarchical data structure from the client component. See Application, 5:12-17, 12:28-34 – 13:1-3, Figure 3A 302, 304, 306, 306, 308 and 310, 13:5-26. As claimed, the server component is also configured to parse the structured data contained therein. See Application, 5:17-26. 13:28-33 – 14:1-2, Figure 3A, 312. And to store the structured data in one or more relational tables with ordinal values for each instance of the repeating fields, wherein each ordinal value indicates an order in which a corresponding instance value of a repeating field occurs in the hierarchical data structure as received. See Application, 14:1-2, 14:6-18, Figure 3A, 314, Figure 6A, 602, 604, and 606, 14:19-21, 14:2-4, Figure 3A, 316, Figure 6A 600.

CLAIM 18 DEPENDENT:

Claim 18 further limits the system recited by claim 10. In particular, claim 10 specifies that the structured data contains at least one repeating group of one or more fields, See Application, 13:5-15, Figure 4, 406. And also specifies that the server component is also configured to generate a group ordinal value for each instance of the repeating group of fields, each ordinal value indicating an order in which a corresponding instance value of the repeating group of fields occurs in the structured data as received. See Application, 14:6-18, Figure 6B, 610, 612, 614, and 616.

Grounds of Rejection to be Reviewed on Appeal

1. Rejection of claims 1-5 and 7-20 under 35 U.S.C. § 102(b) as being anticipated by *Chau et al.* (US 2002/0123993, hereinafter "*Chau*").
2. Rejection of claim 6 under 35 U.S.C. § 103(a) as being unpatentable over *Chau* in view of *Mihai et al.* (US 2005/0065817, hereinafter "*Miha*").

ARGUMENTS

1. *Chau* Does not Anticipate Claims 1-5 or 7-20 under 35 U.S.C. § 102(b)

The Applicable Law

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Regarding Claims 1, 10, and 15:

In this case, *Chau* does not disclose "each and every element as set forth in the claim." For example, *Chau* does not disclose a method for managing structured data having one or more repeating fields that includes a step of receiving a hierarchical data structure containing the structured data wherein the structured data is annotation data related to an annotated data object and wherein at least two instances of a repeating field are contained in the structured data, as recited by claim 1. Claims 10 and 15 recite similar limitations.

In the final rejection, the Examiner argues that *Chau* discloses this limitation at paragraphs 0044, 0051, 0052, and 0195. These paragraphs provide a general description of the "XML Extender" product available from IBM. The cited paragraphs describe the functionality of IBM's XML Extender product and IBM's DB2 database as including the ability to exchange data with one another. No where in this material, however, does *Chau* disclose a hierarchical data structure storing annotation data related to an annotated data object and wherein at least two instances of a repeating field are contained in the structured data. Instead, these paragraphs describe the interchange of data between two software applications, and how the interchange may facilitate certain

business activities, e.g., "Business to Business (B2B) and Business to Client (B2C) applications."

Nevertheless, the Examiner suggests:

[*Chau* discloses] receiving a hierarchical data structure containing the structured data (*Chau*; par [0042] – the hierarchical structure of an XML document" - XML documents are hierarchical; Fig. 11, reference character 1100 - "Receive all XML document containing XML data" wherein the structured data is annotation data related to an annotated data object (*Chau* par [00441] par [00511- par [0052]; par [0195] - XML document is interpreted to be an annotated data object and the data contained therein is interpreted to be annotation data in that it is related to the XML documents.

Examiner's Final Office Action, p.3. Importantly, the Examiner equates the two distinct claimed elements of (1) "a hierarchical data structure containing structured data" and (2) "an annotated data object" as being the same thing. By interpreting an "XML document" as both "an annotated data object" and "annotation data ... related to the XML document," the Examiner conveniently ignores the presence of two independent elements recited by claims 1, 10, and 15 to make this rejection. Applicants submit that "XML document" of *Chau* relied upon by the Examiner, does not, in fact, disclose both the claimed "hierarchal data object" and the "annotated data object" of the present claims.

The Examiner also cites to *Chau*, ¶ 0195. Generally, *Chau* discloses the use what *Chau* refers to an "XML DAD" (document access definition). As defined by *Chau*:

The "DAD itself is an XML document. The DAD associates XML documents to a database through two major access and storage techniques by defining elements Xcolumn and Xcollection. Xcolumn defines how to store and retrieve entire XML documents as column data of the XML user defined type (UDT).

Chau, ¶¶ 76 and 122. In rejecting claim 1, the Examiner cites to aspects of a DTD (document type definition) provided for the DAD. As is known, a DTD describes the XML elements and attributes available for a given XML grammar, and a "valid:" XML document is an XML document that conforms to the rules of a given DTD. In the present rejection, the DTD for the DAD allows a DAD to include an "element _node"

element, and that an "element_node" element may include a "comment node." In other words, a valid DAD may include the following XML structure.

```
<document root>
...
  <element node>
    <comment node> #PCDATA </comment node>
  </element node>
...
</document root>
```

Regarding these tags, the only additional description provided by *Chau* is in paragraph 195, which provides in full "comment_node: representing the comment for this element." Applicants submit the mere fact that an XML document composed against the DAD DTD may have an <element_node> tag and a <comment_node> sub-tag, fails to disclose a step of receiving a hierarchical data structure containing the structured data wherein the structured data is annotation data related to an annotated data object and wherein at least two instances of a repeating field are contained in the structured data as part of a method a method for managing structured data having one or more repeating fields.

For all the foregoing reasons, Applicants submit that claims 1, 10, and 15, along with the claims dependent therefrom, are patentable over *Chau*. Accordingly, withdrawal of this rejection is respectfully requested.

Regarding claims 4, 5:

Claim 4 further limits claim 1. Specifically, claim 4 recites the method of claim 1: wherein the structured data contains at least one repeating group of one or more fields, and the method comprises generating a group ordinal value for each instance of the repeating group of fields, each ordinal value indicating an order in which a corresponding instance value of the repeating group of fields occurs in the structured data as received.

Regarding this limitation, the Examiner's final rejection provides:

Claims 4-5 are rejected with the same rationale given for claim 1, wherein the repeating group of one or more fields consists of one field, as is required by claim 4, and the group thereby contains that one repeating field, as is required by claim 5.

Examiner's Final Office Action, p.4. Claim 4, however, recites a group ordinal value being generated for each instance of a repeating group, in addition to the ordinal value generated for each instance of a repeating field (whether part of a repeating group or not). Thus, claim 4 includes both a field ordinal and a group ordinal for each repeating field and repeating group, respectively. Regarding this limitation, the Examiner cites a passage from *Chau* related to a sequence number "DXX_SEQO" used to order XML path expressions:

 this DXX_SEQNO keeps track of the order of elements occurred for the path expression in each inserted XML documents. With DXX_SEQNO, the user can retrieve a list of the elements with 'the same order as the original XML document using "ORDER BY DXX_SEQNO" in SQL

Final office Action, p.3. While this passage discloses that a "sequence number" may keep track of "the order of elements occurred for the path expression," it discloses nothing about a group ordinal number applied to multiple instances of a repeating group, in addition to a field ordinal applied to instances of a repeating field. For these reasons, Applicants submit that claims 4 and 5 are patentable over *Chau* and respectfully request, therefore, that this rejection be withdrawn.

The Combination of *Chau* in View of *Mihai* Does not Render Claim 6 Obvious

Claims 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chau* in view of *Mihai et al.* (US 2005/0065817, hereinafter "*Mihai*"). Claim 6 depends from one of claim 1 and is, therefore, believed to be allowable for the reasons provided above. Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

The Examiner errs in finding that:

1. Claims 1-5 and 7-20 are anticipated by *Chau*; and
2. Claim 6 is unpatentable over *Chau* in view of *Mihai*.

Withdrawal of the rejections and allowance of all claims is respectfully requested.

Respectfully submitted, and
S-signed pursuant to 37 CFR 1.4,

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CLAIMS APPENDIX

1. (Previously Presented) A method for managing structured data having one or more repeating fields, comprising:
 - receiving a hierarchical data structure containing the structured data wherein the structured data is annotation data related to an annotated data object and wherein at least two instances of a repeating field are contained in the structured data;
 - parsing the structured data to identify the repeating fields;
 - generating an ordinal value for each instance of the repeating fields, each ordinal value indicating an order in which a corresponding instance of a repeating field occurs in the hierarchical data structure as received; and
 - storing the structured data and ordinal values in one or more relational tables.
2. (Original) The method of claim 1, wherein storing the structured data and ordinal values in one or more relational tables comprises storing instance data from a repeating field in a common relational table.
3. (Original) The method of claim 2, wherein the common relational table has at least a column for the instance data, a column for corresponding ordinal values, and a column for a key value to identify a data structure associated with the repeating field.
4. (Original) The method of claim 1, wherein the structured data contains at least one repeating group of one or more fields, and the method comprises generating a group ordinal value for each instance of the repeating group of fields, each ordinal value indicating an order in which a corresponding instance value of the repeating group of fields occurs in the structured data as received.
5. (Original) The method of claim 4, wherein the at least one repeating group contains at least one of the repeating fields.

6. (Original) The method of claim 1, wherein receiving the structured data in a hierarchical format comprises receiving the structured data in a hierarchical format as a Simple Object Access Protocol (SOAP) message.
7. (Original) The method of claim 1, wherein the structured data is received as input via an interface generated based on a template structure defined by one or more fields or groups of fields.
8. (Previously Presented) The method of claim 7, wherein:
the template structure is selected based, at least in part, on the annotated data object.
9. (Original) The method of claim 1, further comprising:
receiving a request for the structured data;
retrieving the structured data and ordinal values from the one or more relational tables;
assembling the structured data in a hierarchical data structure based on the hierarchical data structure in which it was received, with a position of instance values of repeated fields within the hierarchical data structure determined by corresponding ordinal values; and
returning the assembled hierarchical data structure.
10. (Previously Presented) A computer-readable medium containing an executable component for managing structured data having one or more repeating fields, which, when executed by a processor, performs operations comprising:
receiving a hierarchical data structure containing the structured data wherein the structured data is annotation data related to an annotated data object, and wherein at least two instances of a repeating field are contained in the structured data;
parsing the structured data to identify the repeating fields;

generating an ordinal value for each instance of the repeating fields, each ordinal value indicating an order in which a corresponding instance of a repeating field occurs in the hierarchical data structure as received; and

storing the structured data and ordinal values in one or more relational tables.

11. (Original) The computer-readable medium of claim 10, wherein storing the structured data and ordinal values in one or more relational tables comprises storing instance data from a repeating field in a common relational table.

12. (Original) The computer-readable medium of claim 11, wherein the common relational table has at least a column for the instance data, a column for corresponding ordinal values, and a column for a key value to identify a data structure associated with the repeating field.

13. (Original) The computer-readable medium of claim 10, wherein the structured data contains at least one repeating group of one or more fields, and the method comprises generating a group ordinal value for each instance of the repeating group of fields, each ordinal value indicating an order in which a corresponding instance value of the repeating group of fields occurs in the structured data as received.

14. (Original) The computer-readable medium of claim 10, wherein the operations further comprise:

receiving a request for the structured data;

retrieving the structured data and ordinal values from the one or more relational tables;

assembling the structured data in a hierarchical data structure based on the hierarchical data structure in which it was received, with a position of instance values of repeated fields within the hierarchical data structure determined by corresponding ordinal values; and

returning the assembled hierarchical data structure.

15. (Previously Presented) A system for managing structured data, comprising:
a set of template structures, each specifying one or more fields;
a client component configured to generate interfaces based on the template structures for receiving the structured data and to generate a hierarchical data structure containing the structured data, wherein the structured data contains one or more repeating fields with multiple instance values and wherein the structured data is annotation data related to an annotated data object; and
a server component configured to receive the hierarchical data structure from the client component, parse the structured data contained therein, and store the structured data in one or more relational tables with ordinal values for each instance of the repeating fields, wherein each ordinal value indicates an order in which a corresponding instance value of a repeating field occurs in the hierarchical data structure as received.
16. (Previously Presented) The system of claim 15, wherein the one or more relational tables comprises a common relational table for storing instance data from a repeating field.
17. (Original) The system of claim 16, wherein the common relational table has at least a column for the instance data, a column for corresponding ordinal values, and a column for a key value to identify a data structure associated with the repeating field.
18. (Original) The system of claim 15, wherein the structured data contains at least one repeating group of one or more fields, and the method comprises generating a group ordinal value for each instance of the repeating group of fields, each ordinal value indicating an order in which a corresponding instance value of the repeating group of fields occurs in the structured data as received.
19. (Original) The system of claim 15, wherein the server component is further configured to:
receive a request for the structured data from the client component;

retrieve the structured data and ordinal values from the one or more relational tables;

assemble the structured data in a hierarchical data structure based on the hierarchical data structure in which it was received, with a position of instance values of repeated fields within the hierarchical data structure determined by corresponding ordinal values; and

return the assembled hierarchical data structure to the client component.

20. (Previously Presented) The system of claim 15, wherein:

the structured data is received via an interface generated based on a template structure selected, at least in part, based on the annotated data object.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.